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82-15

(NASA-TM-84770) DOCUMENTATION FOR THE
MACHINE-READABLE VERSION OF THE CATALOG OF
GALACTIC O TYPE STARS (NASA) 17 p
HC A02/MF A01

N82-30196

CSCL 03A

Unclas

G3/89 28465

DOCUMENTATION FOR THE
MACHINE-READABLE VERSION OF THE
CATALOG OF GALACTIC O-TYPE STARS



MAY 1982

DOCUMENTATION FOR THE MACHINE-READABLE VERSION

OF THE

CATALOG OF GALACTIC O-TYPE STARS

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May 1982

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SECTION 1 - INTRODUCTION

The *Catalog of Galactic O-Type Stars* (Garmany, Conti and Chiosi 1982) is a compilation from the literature of all O-type stars for which spectral types, luminosity classes and *UBV* photometry exist. Most of the entries come from Cruz-Gonzalez, et al. (1974) and Humphreys (1978), with additional stars from Garrison and Kormendy (1976), Garrison, Hiltner and Schild (1977), Garrison and Schild (1979), Feinstein, Marraco and Muzzio (1973), Feinstein, Marraco and Forte (1976), and Moffat, FitzGerald and Jackson (1979).

The catalog contains 765 stars, for each of which designation (HD, DM, etc.), spectral type, *V*, *B-V*, cluster membership, Galactic coordinates, and source references are given. In addition, the authors have included derived values of absolute visual and bolometric magnitudes, and distances. The source reference should be consulted for additional details concerning the derived quantities.

This document describes the machine-readable version of the *Catalog of Galactic O-Type Stars*, as distributed by the Astronomical Data Center at Goddard Space Flight Center. It is intended to enable users to read and process the data with a minimum of guesswork, and a copy should be distributed with any machine-readable version of the catalog.

SOURCE REFERENCE

Garmany, C. D., Conti, P. S. and Chiosi, C. 1982, *Astrophys. J.* (submitted).

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the Catalog of Galactic O-Type Stars is given in Table 1. The suggested format specifications apply to FORTRAN formatted read statements and can be modified depending upon individual programming and processing requirements. The format of the star identification field is entirely uniform within each type of identification, so the catalog can be sorted by name field and all HD, DM, NGC, etc. identifications will be ordered together properly. Alternate format specifications are given in parentheses.

Table 1. Tape Contents. Catalog of Galactic O-Type Stars.

Byte(s)	Units	Suggested Format	Description
1-18	---	18A1 (4A4,A2)	Star identification: Henry Draper Catalogue (HD) number; Durchmusterung (DM) number; miscellaneous designations. Bytes 1-8 give the alphanumeric part of the catalog, cluster or miscellaneous designation; bytes 9-16 give the number of the star, and bytes 17-18 give component identifications where applicable. References for miscellaneous designations are listed in Table 2.
19	---	A1	An asterisk (*) if the spectral type given is new and based upon either 63 \AA mm^{-1} or 79 \AA mm^{-1} spectra taken at Kitt Peak National Observatory. Blank if spectral type taken from the literature.
20-28	---	A8 (8A1)	Spectral type according to the source given in byte 75 or byte 77.
29-33	mag	F5.2	V according to the source given in byte 75 or byte 78.
34	---	1X	Blank
35-39	mag	F5.2	B-V according to the source given in byte 75 or byte 78.
40	---	1X	Blank

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
41-45	mag	F5.2	Absolute visual magnitude, M_V , taken from the primary source given in byte 75 or from Conti's (1975) calibration of spectral type and M_V
46	---	1X	Blank
47-52	mag	F6.2	Absolute bolometric magnitude M_{bol} , computed using Conti's (1975) temperature scale and Morton's (1969) bolometric corrections as a function of temperature
53	---	1X	Blank
54-55	---	I2	Code for cluster or association membership, as listed in Table 3. Blank for presumed field stars.
56	---	1X	Blank
57-60	kpc	F4.1	Distance computed from star's distance modulus, assuming an interstellar absorption of $A_V = 3E_{B-V}$
61	---	1X	Blank
62-64	°	I3	Galactic longitude ℓ^{II}
65	---	1X	Blank
66-67	'	I2	ℓ^{II}
68-70	°	I3	Galactic latitude b^{II} , sign always in byte 68.
71	---	1X	Blank
72-73	'	I2	b^{II}
74	---	1X	Blank

Table 1. (concluded)

Byte(s)	Units	Suggested Format	Description
75-78	---	4I1	A string of four 1-digit integers giving codes for primary source, additional cluster membership, additional spectral types, and additional photometry, respectively. References for the codes are given in Table 4. Blank if not present.
79-80	---	2X	Blank

Table 2. Catalog of Galactic O-Type Stars. References for Miscellaneous Designations

Designation	Reference
GEORG	Georgelin, Georgelin and Roux (1973).
HILTNER	Hiltner and Johnson (1956); Hiltner (1956).
LS I	Hardorp et al. (1959).
LS II	Stock et al. (1960).
LS III	Hardorp et al. (1964).
LS IV	Nassau and Stephenson (1963).
LS V	Hardorp et al. (1965).
LS VI	Nassau et al. (1965).
LSS	Stephenson and Sanduleak (1971).
MILL	Miller (1972).
MART	Martin (1967).
S	Sharpless (1959).

Table 3 lists the clusters and associations referred to by the codes contained in bytes 54-55 of the data records.

Table 3. *Catalog of Galactic O-Type Stars. Cluster and Association Membership.*

Code	Group	Code	Group
1	Sgr OB1	43	NGC 2129
2	Sgr OB7	44	Gem OB1
3	Sgr OB4	45	Mon OB1
4	Sgr OB6	46	Ori OB1
5	Ser OB1	47	Mon OB2
6	Sct OB3	48	CMa OB1
7	Ser OB2, NGC 6604	49	Cr 121
8	Sct OB2	50	NGC 2414
9	Cr 359	51	NGC 2362
10	Vul OB1	52	NGC 2439
11	Vul OB4	53	Pup OB1
12	Cyg OB3	54	Vel OB1
13	Cyg OB1	55	Car OB1
14	Cyg OB8	56	TR 14
15	Cyg OB9	57	TR 15
16	Cyg OB2	58	TR 16
17	Cyg OB4	59	Cr 228
18	Cyg OB7	60	Car OB2
19	NGC 6991	61	NGC 3576
20	Lac OB1	62	NGC 3766
21	Cep OB2, TR 37 nucleus	63	Cru OB1
22	Cep OB1	64	Cen OB1
23	NGC 7235	65	R 80
24	Cep OB5	66	Pis 20
25	Cep OB3	67	Nor OB1
26	Cas OB2	68	NGC 6067
27	Cas OB5	69	R 103
28	Cep OB4	70	R 105
29	Cas OB4	71	Ara OB1a
30	Cas OB14	72	NGC 6204
31	Cas OB7	73	Ara OB1b
32	Cas OB1	74	Sco OB1
33	NGC 457	75	Sco OB2
34	Cas OB8	76	HD 156154 group
35	Per OB1	77	M 6
36	Cas OB6	78	Sgr OB5
37	Cam OB1	79	ζ Pup
38	Per OB3	80	BO 4&5
39	Cam OB3	81	NGC 3572
40	Per OB2	82	Hogg 10
41	Aur OB1	83	Lyngå 14
42	Aur OB2	84	NGC 6322

Table 4 lists references for the codes in bytes 75-78 of the data records. The additional sources were generally used in cases where the data were missing or inadequate in the primary source or where there is disagreement among the papers consulted.

Table 4. *Catalog of Galactic O-Type Stars. Source References*

Code	Reference
------	-----------

Primary source (byte 75)

- | | |
|---|---|
| 1 | Cruz-González et al. (1974). |
| 2 | Garrison, Hiltner and Schild (1977). |
| 3 | Humphreys (1978). |
| 4 | Garrison and Kormendy (1976).
Garrison and Schild (1979). |
| 5 | Feinstein, Marraco and Muzzio (1973).
Feinstein, Marraco and Forte (1976). |
| 6 | Moffat, FitzGerald and Jackson (1979). |

Additional cluster membership (byte 76)

- | | |
|---|-----------------------------|
| 1 | Conti and Alschuler (1971). |
| 2 | Moffat and Vogt (1975). |
| 3 | Humphreys (1978). |

Additional spectral types (byte 77)

- | | |
|---|--------------------------------------|
| 2 | Garrison, Hiltner and Schild (1977). |
|---|--------------------------------------|

Additional photometry (byte 78)

- | | |
|---|--------------------------------------|
| 4 | Klare and Neckel (1977). |
| 5 | Feinstein, Marraco and Forte (1976). |
| 6 | Guetter (1974). |
-

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 1 is sufficient for a user to describe the indigenous characteristics of the data file to a computer. Not included is information easily varied from installation to installation, such as block size, (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, number of tracks, and internal coding (EBCDIC, ASCII, etc.). These parameters should always be transmitted if secondary copies of the file are supplied to other users or installations.

Table 1. Tape Characteristics. *Catalog of Galactic O-Type Stars*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH	80
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	765

* Fixed block length (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS, ACKNOWLEDGMENTS AND REFERENCES

The *Catalog of Galactic O-Type Stars* was received on magnetic tape from Dr. C. D. Garmany of the University of Colorado on April 15, 1982. The following modifications were made to the format in order to make the star designations uniform (so that the file can be sorted by star name if desired) and to make the data records more uniform and easier to process by other users.

1. The B-V data were made uniform by attaching preceding zeroes where they were not present and by moving minus signs so that they always occur in byte 65.
2. Minus signs for the bolometric magnitude field were moved in order to always occur in byte 47.
3. Cluster and association membership codes were written as -0 if not present. These were changed to blanks.
4. Signs were attached to all Galactic latitude values, uniformly in byte 68.
5. Source codes of 0 were changed to blanks so that the string of codes in bytes 75-78 contains digits only where reference codes are present.
6. The star designation field was expanded to 18 bytes so that the identifications could be made uniform. The format was then changed by preparing a separate data set containing only the identifiers and editing all designations to contain catalog or cluster specifications in bytes 1-8, star numbers in bytes 9-16, and component identifications in bytes 17-18. The modified designation fields were then substituted back into the data file. A sort of the catalog by star designation will now yield a data set with all similar designations together and properly ordered.
7. The asterisk signifying a new spectral classification made by the authors, formerly appearing at the beginning of a record, was moved to byte 13.
8. Three duplicate entries were removed after carefully checking, confirming their redundancy, and notifying the first author.

ACKNOWLEDGMENT

Appreciation is expressed to C. D. Garmany for supplying the *Catalog of Galactic O-Type Stars* on magnetic tape with a listing and explanations, and for reviewing the modified catalog and resulting documentation.

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SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical data records exactly as they are recorded on the tape. Groups of records from the beginning and end of the catalogue are illustrated. The beginning of each record and bytes within the record are indicated by the column heading index (digits read vertically) across the top of each page.

